151.3.04 Fabrication

General Provisions 101 through 150.

151.3.05 Construction

General Provisions 101 through 150.

151.3.06 Quality Acceptance

General Provisions 101 through 150.

151.3.07 Contractor Warranty and Maintenance

General Provisions 101 through 150.

151.4 Measurement

This item of work is not measured separately for payment.

151.4.01 Limits

The total sum of payments shall not exceed the original Contract amount bid for this item.

151.5 Payment

The Department will make partial payments as follows:

1. The first regular payment is 50 percent of the amount bid for mobilization, or 3 percent of the original Contract amount, whichever is less.
2. When 5 percent of the original contract amount is earned, the next progress payment is 100 percent of the amount bid for mobilization, or 3 percent of the total original contract amount, whichever is less, minus any previous payments.
3. Any amount bid for mobilization in excess of 3 percent of the original Contract amount is paid when work on the Project is complete.
4. The total sum of the payments shall not exceed the original Contract amount bid for this item.

Payment includes all costs for mobilization, demobilization, and remobilization as required to complete the work.

Payments will be made under:

Item No. 151	Mobilization	Per lump sum

151.5.01 Adjustments

General Provisions 101 through 150.

Section 152—Field Laboratory Building

152.1 General Description

This work includes furnishing and maintaining field laboratory buildings, if required by the Contract. The building is reserved for the Engineer's exclusive use as long as the Engineer deems necessary.

152.1.01 Definitions

General Provisions 101 through 150.

152.1.02 Related References

A. Standard Specifications

Section 400—Hot Mix Asphaltic Concrete Construction

Section 402—Hot Mix Recycled Asphaltic Concrete

B. Referenced Documents

AASHTO TP4

AASHTO T166

AASHTO T209

AASHTO T309

GDT 125, “Method of Test for Determining Asphalt Content by Ignition”

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152.1.03 Submittals

General Provisions 101 through 150.

152.2 Materials

General Provisions 101 through 150.

152.2.01 Delivery, Storage, and Handling

General Provisions 101 through 150.

152.3 Construction Requirements

General Provisions 101 through 150.

152.3.01 Personnel

General Provisions 101 through 150.

152.3.02 Equipment

General Provisions 101 through 150.

152.3.03 Preparation

General Provisions 101 through 150.

152.3.04 Fabrication

General Provisions 101 through 150.

152.3.05 Construction

A. Field Laboratory Physical Requirements

Provide a laboratory using a structure approved by the Engineer, such as a:

- Building
- Trailer
- Fixed building erected on the site
- Vacated house at an approved location

Each field laboratory shall house the required testing equipment and meet the minimum requirements for dimensions, space, and facilities.

Each building or trailer shall be at least 7 ft (2.1 m) wide and 7 ft (2.1 m) high inside and contain not less than 120 ft² (11 m²) of floor space. Each unit shall be floored, roofed, and weather tight and contain the following:

- At least one hinged or sliding window on each side with each window having at least 6.5 ft² (0.6 m²) of openings
- An entrance door that can be securely locked
- Built-in work table with at least two drawers (one lockable)
- Lighting and ventilation
- Heating with necessary fuel
- Potable running water
- Electric current
- Sheds and platforms required for special testing equipment
- Sanitary Facilities—Include in each field laboratory sanitary facilities that meet the requirements of the local or State Health Departments.

- Fire Extinguisher—Equip each building with at least one approved fire extinguisher that meets the following requirements:
  1) Multipurpose dry chemical type extinguisher
  2) Underwriters Laboratory rating of 4A-40BC

  Mount the extinguisher(s) in a convenient and conspicuous place that is easily accessible from any part of the building. Maintain the extinguisher(s) in working condition according to the requirements of NFPA–10A.

B. Plant Laboratory Physical Requirements

Provide laboratory buildings at asphalt, concrete, or base plants. Place the buildings so that the plant is in full view from one of the windows.

C. Number of Laboratories Required

The number of laboratories shown in the Proposal is based on estimated job requirements. Actual conditions may require more or fewer. Provide the quantity as required by the Engineer at the Unit Price Bid for the facility.

D. Asphaltic Concrete Plant Laboratory Requirements

1. **Laboratory Building.** Provide a laboratory building that meets the minimum requirements for a Field Laboratory as described in Subsection 152.3.05.A.
2. **Ventilation System.** Equip the laboratory so that when the windows and doors are closed and the ventilation system is functioning as required, the temperature can be maintained between 65 °F and 80 °F (18 °C and 27 °C).
3. **Enclosures.** Provide enclosures in laboratories for procedures where extracting solvent vapors are emitted. After the asphalt is extracted, dry samples under an enclosure or inside an oven that is vented outside the lab. Provide enclosures as follows:

   Equip each enclosure with the following:

   - A hood, glass, or other doors capable of enclosing the extracting solvent vapors from the ambient air in the lab
   - An exhaust fan located in the rear or top of the hood for each work compartment
   - Replacement air provided through an open window or other opening to achieve the specified exchange of air
   - Ventilation system capable of exchanging air at the rate of 100 ft^3/ft^2/min (30 m^3/m^2/min) over the entire open door area of each enclosure

   Locate the laboratory ventilation, heating, and cooling systems so that the exhausted extracting solvent vapors do not re-enter the laboratory through either the heating or cooling systems.

   Ensure that the extracting solvent is supplied to the laboratory through a closed-system opening only under the enclosures.

   Mount the storage containers for the extracting solvent outside the laboratory and run a feed line from the container to a cut-off valve located in the enclosures. Ensure that all parts of the enclosures, hoods, and other related equipment are functional during testing.
4. **Platform.** Provide a safe platform to the proper height for the Inspector to use to obtain asphalt mix or base samples and to inspect mixes in the truck beds.
5. **Testing Equipment.** Furnish and maintain in good condition at the field laboratory the following testing equipment. All testing equipment is subject to the Engineer's approval.
   a. One each—Oven (mechanical convection, range to 400 °F (204 °C). Comparable to Blue M Model OV-560A-2.

   NOTE: Vent the oven exhaust outside the laboratory.

   b. One each—Sieve Shaker (Ro-Tap design or approved equal). Designed for Standard 8 in (203 mm) diameter sieve.
   c. One each—
      - Computer, IBM or IBM Compatible
      - 540 Megabyte Hard Disk Drive (Minimum)
      - 3 ½ inch (90 mm) High Density Floppy Disk Drive
      - CD-ROM Drive (4X Minimum)

- Mouse
- Modem 9600 Baud (Minimum)
- 1 Parallel and 2 Serial Ports
- 16 Megabyte Random Access Memory Expandable to at Least 32 Megabytes
- VGA Monitor
- 486 Microprocessor Operating at 33 Megahertz (Minimum)

d. One each—Printer (Desk Jet HP Letter Quality Printer)

e. One each—Electronic balance with weighing capacity of at least 26.45 lb. (12,000 grams) with digital display, and sensitivity to meet requirements of AASHTO T166 and AASHTO T209. The weighing device shall have a suspension apparatus which meets requirements of AASHTO T166.

f. *One each—Superpave Gyratory Compactor (SGC) Equipment-A Superpave Gyratory Compactor and appurtenances, including a calibration kit, which meets equipment requirements and testing protocol of a nationally recognized Superpave Center and AASHTO TP 4. The SGC shall be equipped with:

- A printer to provide a real-time printout of the date and time of compaction, number of gyrations, and specimen height for each gyration during the compaction cycle.
- At least two mold assemblies
- A specimen extruder

g. *One each—Vacuum pump flasks or bowls, fittings and other accessories as required by AASHTO T209. (A corelok device with related accessories may be substituted if approved by the Department).

h. *One each—Asphalt Ignition Oven which meets requirements of GDT 125 and AASHTO T309.

*Required only for interstate Projects involving mainline traveled way that include pay items under Section 400 or Section 402.

E. Portland Cement Concrete Plant Laboratory Requirements

For Portland cement concrete plants, provide a plant laboratory building and testing and curing equipment meeting the following minimum requirements.

1. **Laboratory Building.** Provide a laboratory building that contains:
   - Combined office/workspace measuring 300 ft² (28 m²)
   - Heating and air conditioning equipment capable of maintaining an interior temperature of 70 °F (21 °C)
   - Separate office space with enough space for a desk and at least two chairs
   - A work table at least 2.5 ft (750 mm) wide, 5 ft (1500 mm) long, and 3 ft (900 mm) high to prepare concrete cylinders for testing
   - An outside work area of at least 10 ft by 10 ft (3 m by 3 m) consisting of a concrete slab constructed level and true, with a light broom finish
2. **Testing and Curing Equipment.** Provide the following testing and curing equipment:
   - Concrete cylinder capping equipment including molds, melting pot with ventilation and accessories, and a sufficient supply of capping compound, all meeting applicable ASTM Specifications.
   - Concrete cylinder compression testing machine with a minimum capacity of 250,000 lbs (1112 kN) that meets applicable ASTM Specifications.
   - Concrete cylinder curing tanks capable of maintaining 200 cylinders at 73 °F ± 3 °F (23 °C ± 1.7 °C) for a 28-day curing period.
   - Concrete cylinder warm water curing tank capable of maintaining 18 cylinders at 95 °F ± 5 °F (35 °C ± 2.8 °C) for a 24-hour curing period.

Maintain the equipment in good condition and to the Engineer's approval.

152.3.06 Quality Acceptance

The dimensions specified above are minimum requirements. Minor dimensional and detail deviations are not cause for rejection if the Engineer approves of the deviation.

152.3.07 Contractor Warranty and Maintenance

Maintain each building, appurtenance, and sanitary facility as required by this Specification. Furnish electricity, water, and heating as required by this Specification.

Ownership of the building(s) remains with the Contractor. Maintaining and furnishing the buildings(s) after the date of Final Acceptance of the Project is not required.

152.4 Measurement

The actual number of field laboratories furnished according to this Specification is measured separately for each laboratory. There will be no measurement or payment for laboratories furnished at base, asphaltic concrete, or Portland cement concrete central mix plants.

152.4.01 Limits

General Provisions 101 through 150.

152.5 Payment

Each field laboratory measured for payment as described in Subsection 152.4, is paid at the Contract Unit Price bid for each laboratory.

Payment is full compensation for the cost of all foundations, buildings, sheds, platforms, utilities, maintenance, sanitary facilities, removal, razing, heat, electricity, water, and site preparation and cleanup according to this Specification.

Payment for each field laboratory is made in two installments:

- Sixty-five percent of the contract price is paid when the Laboratory is ready for occupancy.
- Thirty-five percent of the contract price is paid when the Department finishes using the laboratory.

Payment will be made under:

Item No. 152	Field laboratory	Per each

152.5.01 Adjustments

General Provisions 101 through 150.

Section 153—Field Engineer's Office

153.1 General Description

This work includes providing, furnishing, and maintaining field office buildings, when the Contract requires, before beginning construction and according to this Specification. The Contractor shall possess the building while the Department uses it. See Subsection 153.3.07, "Contractor Warranty and Maintenance."

The Engineering personnel will use the building exclusively for as long as they consider necessary, but no longer than the date of Final Acceptance of the Project.

153.1.01 Definitions

General Provisions 101 through 150.

153.1.02 Related References

A. Standard Specifications

Section 636—Highways Signs

Section 643—Fence

Section 910—Sign Fabrication

Section 911—Sign Posts

Section 912—Sign Blanks and Panels

Section 913—Reflectorizing Materials

B. Referenced Documents

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